

Office Action Summary

Application No.

10/525,033

Applicant(s)

ERA, KAZUNARI

Examiner

WESLEY TUCKER

Art Unit

2624

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SI/08)
- Paper No(s)/Mail Date 6-25-08
- 4) ☒ Interview Summary (PTO-413)
- Paper No(s)/Mail Date 8-26-08
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 8th 2008 has been entered.

Response to Amendment

2. Applicant's amendment filed August 8th 2008 has been entered and made of record.
3. Applicant has amended claims 18, 29 and 34. Claims 18-34 are pending.
4. Applicant has amended the claims to include the limitation that Z-values representing depth are calculated for each pixel in the image based on only image data for that pixel. Applicant's remarks as well as discussion in the personal interview held on August 26th 2008 make clear that this new limitation distinguishes over the prior art of Murata. However, a new rejection in view of Murata and Applicant cited Japanese Patent Publication number 2002-123842 to Isao et al. is presented below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 18-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of U.S. Patent 6,445,833 to Murata et al. and Japanese Patent Publication number 2002-123842 to Isao et al., hereinafter referred to as Isao.

With regard to claim 18, Murata discloses a method for generating a stereographic image comprising:

a calculating step of calculating Z-values of each pixel based on pixels on image data for that pixel, the pixels forming an image, each Z-value being assigned to a pixel, and each Z-value representing a depth of an object corresponding to the pixel (column 7, lines 25-39);

an adjusting step of adjusting a Z-value of a target pixel obtained in said calculating step using a Z-value of at least one individual pixel other than the target pixel (column 7, lines 30-34 and 40-46); and

a generating step of determining an amount of displacement of a target pixel on the basis of an adjusted Z-value of the target pixel, and displacing the target pixel horizontally by the determined amount, to generate images for the right and the left eyes (column 7, lines 33-39).

Murata discloses a three step method as claimed for calculating parallax information for generating stereo images. The "perspective image characteristic value" is interpreted as the claimed Z-value. Murata repeatedly discloses calculating parallax information for each predetermined unit area and repeatedly expresses that each predetermined unit area is an area consisting of one pixel, for example (column 7, lines 20-24, 30-35 and column 8, lines 45-48). It is clear that Murata is concerned with the perspective correction value on a pixel by pixel basis and is therefore interpreted to read on the claim language as recited.

However Murata does not explicitly disclose that the initial Z-value, or perspective characteristic value as it is called by Murata, is calculated using only image data for that pixel. Isao teaches calculating a depth value for each pixel of an image using only image data for the particular pixel in question (paragraphs [0027]-[0032]). Isao teaches that chroma saturation which is taken directly from the RGB information of the pixel is used to determine or estimate a depth value or Z-value. This appears to be very similar to the Z-value calculation disclosed in Applicant's specification on page 16, lines 4-18. The purpose of using this information is to achieve high-speed processing since only the data from each particular pixel is needed to determine pixel depth. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to use the quick depth value calculation taught by Isao in combination with the depth value calculation disclosed by Murata in order to perform depth values with high-speed processing.

With regard to claim 19, Murata discloses the method of claim 18, wherein in said calculating step a Z-value of a target pixel is obtained by adding predetermined weights to color components of image data of the target pixel (column 35, lines 1-21).

With regard to claim 20, Murata discloses the method of claim 19, wherein the weights are determined based on the ratio of cone cells sensitive of R, G, and B, respectively, which cones exist in a retina of a human eye (column 35, lines 1-21).

With regard to claim 21, Murata discloses the method of claim 18, wherein in said adjusting step Z-values of pixels are adjusted so that a single step available for a Z-value of a pixel corresponding to an object located backward in an original image express deeper depth than a single step available for a Z-value of a pixel corresponding to an object located forward in the original image (column 7, lines 40-46).

With regard to claim 22, Murata discloses the method of claim 18, wherein in said adjusting step: tendency of Z-values of pixels in the image is analyzed by comparing a Z-value of a pixel within an area with a Z-value of a pixel within another area; and when a result of the analysis agrees with a predetermined condition, a quantitative relation between the amount of displacement of the target pixel and the Z-value of the target pixel is reversed in said generating step (column 10, lines 40-62).

With regard to claim 23, Murata discloses the method of claim 18, wherein in said adjusting step: an average of Z-values of pixels within an area which includes a target pixel is obtained; and a Z-value of the target pixel is replaced by the obtained average (column 35, lines 52-67).

With regard to claim 24, Murata discloses the method of claim 18 wherein in said adjusting step:

a distribution of the Z-values of all pixels in the image and an average of all pixels in the image are obtained; and deviation of the distribution is corrected using the obtained average (column 35, lines 52-67).

With regard to claim 25, Murata discloses the method of claim 18, wherein in said adjusting step:

at least one object in the image represented by the image data is identified referring to Z-values of pixels calculated in said calculating step; and a Z-value of the target pixel is adjusted on the basis of a Z-value of a pixel located within an area corresponding to the identified object (column 34, lines 8-25).

With regard to claim 26, Murata discloses the method of claim 18, wherein in said adjusting step a step size of quantization of the Z-value is determined based on a value of a parameter specified by a user (column 7, lines 10-24). Murata discloses that the Z

value or perspective image characteristic value is chosen from a selection of combinations of values. This selection must be made at some point in the operation of the device and that selection is interpreted as being user-specified.

With regard to claim 27, Murata discloses the method of claim 18, wherein in said adjusting step either an upper limit or a lower limit of the calculated Z-value is determined based on a value of a parameter specified by a user (column 7, lines 10-24). The limits of the calculated Z-value are determined by what is selected to represent and calculate the Z value or perspective image characteristic value.

With regard to claim 28, Murata the method of claim 18, further comprising a step of obtaining moving images comprised of a plurality of images, and wherein a stereographic image is generated from each image, to generate stereographic images corresponding to the moving images in real time (column 8, lines 49-67).

With regard to claim 29, the discussion of claim 18 applies. Murata discloses an apparatus for use in performing the method of claim 18 as discussed. With regard to the "means for" performing the steps of claim 18 (Fig. 51).

With regard to claims 30 and 31, the discussion of claims 26 and 27 apply respectively.

With regard to claim 32, Murata discloses the apparatus of claim 30 wherein the parameter represents a step size of quantization of the Z-value (column 7, lines 10-24). Murata discloses that the Z value or perspective image characteristic value is chosen from a selection of combinations of values. This selection must be made at some point in the operation of the device and that selection is interpreted as being user-specified.

With regard to claim 33, Murata discloses the apparatus of claim 30, further comprising: storing means for storing image data for the right and the left eyes; and displaying means for displaying an image represented by the image data stored in said storing means in compliance with a predetermined scheme (column 15, lines 62-67).

With regard to claim 34, the discussions of claims 18 and 29 apply. Murata discloses the method and apparatus to be implemented by a programmable computer product (Fig. 1).

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to WESLEY TUCKER whose telephone number is (571)272-7427. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wes Tucker/
Examiner, Art Unit 2624